CHAPTER 1

Basis for the Establishment of Minimum Flows and Levels

This chapter provides an overview of the legislation that authorizes the water management district to establish minimum flows and levels. It also provides for the factors and considerations that need to be addressed in the process of establishment. An outline of South Florida Water Management District's policies on water resource protection authorities are also included to allow the reader to understand the role MFLs play with respect to the holistic approach to achieving sustainability used by this District.

I. Legal and Policy Bases for Establishment of Minimum Flows and Level

Florida law requires the water management districts to establish MFLs for surface waters and aquifers within their jurisdiction [Section 373.042(1), F.S.]. The minimum flow is defined as the "...limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area." The minimum level is defined as the "limit at which further withdrawals would be significantly harmful to the water resources of the area." [Section 373.042(1)(a)-(b), F.S.]. The statute further directs the water management districts to use the best available information in establishing a MFL level. Each water management district must also consider, and at its discretion may provide for, the protection of non-consumptive uses in the establishment of MFLs. In addition, a baseline condition for the protected resource functions must be identified through consideration of changes and structural alterations in the hydrologic system.

Each surface water body or aquifer serves an array of water resource functions. These functions must be considered when establishing a MFL as a basis for defining significant harm. The term "water resource" is used throughout Chapter 373. Water resource functions protected under Chapter 373 are broad, as illustrated in Section 373.016, F.S., and include flood control, water quality protection, water supply and storage, fish and wildlife protection, navigation, and recreation.

The State Water Resource Implementation Rule, Section 62-40.405, F.A.C, outlines specific factors to consider when establishing MFLs including protection of water resource natural seasonal changes in water flows or levels, environmental values associated with aquatic and wetland ecology, and water levels in aquifer systems. Other specific considerations include:

- Fish and wildlife habitat and the passage of fish
- Maintenance of freshwater storage and supply
- Water quality
- Estuarine resources
- Transfer of detrital material
- Filtration and absorption of nutrients and pollutants

- Sediment loads
- Recreation in and on the water
- Navigation
- Aesthetic and scenic attributes

This policy determination as to which resource functions to consider in establishing MFLs is within the Governing Board's purview. This analysis requires a comprehensive look at sustainability of the resource itself as well as its role in sustaining overall regional water resources. Chapter 3 of this MFL document provides a detailed description of the relevant water resource functions of the LWC Aquifer System.

Once the water resource functions to be protected by a specific minimum flow or level have been identified, the baseline resource conditions for assessing significant harm must be identified. Considerations for making this determination are set forth in Section 373.0421(1)(a), F.S., which requires the water management districts, when setting a MFL, to consider changes and structural alterations that have occurred to a water resource. Likewise, Section 373.0421(1)(b), F.S., recognizes that certain water bodies no longer serve their historical function and that recovery of these water bodies to historical conditions may not be feasible. These provisions are discussed in Chapter 3, to examine their applicability to the minimum levels that are proposed for the LWC aquifers.

II. What level of protection is provided by the MFL standard of *significant harm*?

The overall purpose of Chapter 373 is to ensure the sustainability of water resources of the state (Section 373.016, F.S.) To carry out this responsibility, Chapter 373 provides the District with several tools with varying levels of resource protection standards. MFLs play one part in this framework. Determination of the role of MFLs and the protection that they offer, versus other water resource tools available to the District, is discussed below.

Each water resource protection standard must fit into a statutory niche to achieve this overall goal. Pursuant to Parts II and IV of Chapter 373, surface water management and consumptive use permitting regulatory programs must prevent **harm** to the water resource. Water shortage statutes dictate that permitted water supplies must be restricted from use to prevent **serious harm** to the water resources. Other resource protection tools include reservation of water for fish and wildlife, or health and safety (Section 373.223(3)), and aquifer zoning to prevent undesirable uses of the ground water (Section 373.036). By contrast, MFLs are set at the point at which **significant harm** to the water resources, or ecology, would occur. The levels of harm cited above, harm, significant harm, and serious harm, are relative resource protection terms, each playing a role in the ultimate goal of achieving a sustainable water resource.

The conceptual relationship among the terms harm, significant harm, and serious harm proposed by the District is shown in **Figure 1**.

The general narrative definition of significant harm proposed by the District (SFWMD 2000) for the water resources of an area is as follows:

> **Significant harm** *is defined as a loss of specific water resource functions that take multiple years to recover, which result from a change in surface water or ground water hydrology.*

The resource protection criteria used for Consumptive Use Permitting (CUP) are based on the level of impact that is considered harmful to the water resource. These criteria are applied, to various resource functions, to establish the range of hydrologic change that can occur without harm. The hydrological criteria include level, duration, and frequency components and are used to define the amount of water that can be allocated from the resource. Saltwater intrusion, wetland drawdown, aquifer mining, and pollution prevention criteria in Chapter 40E-2, F.A.C., all together define the harm standard for purposes of consumptive use allocation.

These harm criteria may be applied using climate conditions that represent an assumed level of certainty. The level of certainty used in the Lower West Coast, Lower East Coast, and Upper East Coast Regional Water Supply Plans is a 1-in-10 year drought frequency, as defined in the District's permitting rules. In addition, the 1-in-10 year drought level of certainty is the water supply planning goal that was established in (Section 373.0361, F.S.). The standard for harm, as used in the CUP process, is considered to be the point at which adverse impacts to water resources cannot be restored within a period of one to two years of average rainfall conditions. These short-term adverse impacts are addressed for the CUP program, which calculates allocations to meet demands for use during relatively mild, dry season conditions, defined as the 1-in-10 year drought event. See the discussion regarding other resource protection tools associated with CUP in Chapter 4.

Pursuant to Section 373.246, F.S., water shortage declarations are designed to prevent serious harm from occurring to water resources. Serious harm, the ultimate harm to the water resources that was contemplated under Chapter 373, F.S., can be interpreted as long-term, irreversible, or permanent impacts. Declaration of water shortages is the tool used by the Governing Board to prevent serious harm. When drought conditions exist, water users, typically for irrigation or outside use, increase the amount of withdrawals to supplement water not provided by rainfall. In general, the more severe the drought, the more supplemental water is needed, This feature, combined with the lack of recharge from rainfall, result in the need for progressively restrictive cutbacks until normal rainfall and water levels return.

The District has implemented its water shortage authority by restricting consumptive uses based on the concept of shared adversity between users and the water resources (Chapter 40E-21, F.A.C.). Under this program, different levels or phases of water shortage restrictions are imposed relative to the severity of drought conditions. The four phases of the current water shortage restrictions are based on the relative levels of risk posed to resource conditions leading up to the serious harm impacts. Under the SFWMD's program, Phase I and II water shortages are primarily designed to prevent harm, such as localized, but recoverable, damage to wetlands or short-term inability to maintain water levels needed for restoration. Actions that may be taken include reducing water use through conservation techniques and minor use restrictions, such as car washing and lawn watering. Phases III and IV, however, require use cutbacks that are associated with some level of economic impact to the users, such as agricultural irrigation restriction.

III. MFL Recovery and Prevention Strategy

Upon establishment of the MFL through rulemaking, it is implemented through a multifaceted recovery or prevention strategy, developed pursuant to Section 373.0421(2), F.S. A minimum aquifer level prevention strategy was developed for the LWC Aquifer System in the Lower East Coast Regional Water Supply Plan (approved May 2000) and the Lower West Coast Regional Water Supply Plan (approved April 2000), and will be implemented following establishment of the MFL.

Section 373.0421(2), F.S., provides that if it is determined that water flows or levels will fall below an established MFL within the next 20 years or is presently below the MFL, the water management district must develop and implement a recovery or prevention strategy. The twenty-year period should coincide with the regional water supply plan horizon for the subject area and the strategy is to be developed in concert with that planning process.

The goal of the recovery and prevention strategy is to continue to provide sufficient water supplies for all existing and projected reasonable-beneficial demands, while taking actions to achieve the MFL criteria. If the existing level is below the MFL, recovery to the MFL must be achieved "as soon as practicable." Many different factors will influence the water management district's capability to implement the proposed actions in a timely manner, including funding availability, detail design development, permittability of regulated actions, land acquisition, and implementation of updated permitting rules.

Depending on the existing and projected flows or levels, from a regulatory standpoint, either water shortage triggers, interim consumptive use permit criteria, or both, may be recommended in the recovery and prevention strategy. The approach varies depending on whether the MFL is currently exceeded or not, and depending on the cause of the MFL exceedances, e.g., consumptive use withdrawals, poor surface water conveyance facilities or operations, over drainage, or a combination of the above.

Incremental measures to achieve the MFL must be included in the recovery and prevention strategy, including a timetable for a provision of water supplies necessary to meet reasonable beneficial uses. Such measures include development of additional water supplies and conservation and other efficiency measures. These measures must make water available "concurrent with to the extent practical, and to offset, reductions in permitted withdrawals, consistent with …[Chapter 373]." The determination of what is "practical" in identifying measures to concurrently replace water supplies will likely be made through consideration of economic and technical feasibility of potential options. Additional information about the specific prevention strategy recommended for the LWC Aquifer System is provided in Chapter 4.

IV. Process Steps and Activities

The process for establishing a minimum aquifer level for the LWC aquifers can be summarized as follows:

1. Through the development of the Lower West Coast Regional Water Supply Plan, the Lower East Coast Regional Water Supply Plan and concurrent staff research and analysis a methodology and technical basis for establishment of the MAL was developed.
2. Further public consideration of a technical basis and methodology for establishing the MAL and review of the first draft of the rule was conducted during rule development workshops in August 2000.
3. A scientific peer review of the MAL document will be conducted during September 2000 to verify the technical criteria pursuant to Section 373.0421(2), F.S.
4. In October 2000 revisions to the MAL document recommended by the panel, as appropriate, will be incorporated into the criteria.
5. A final rule draft will be presented to the Governing Board for review and public comment. Staff will seek authorization to publish the rule draft in the Florida Administrative Weekly in December 2000.
6. Barring receipt of a petition for a rule challenge, the Governing Board will consider adoption of the final rule. Should a petition be received, an expedited administrative hearing will be conducted to resolve issues with the proposed rule draft.